

IN THE CLAIMS:

Please amend the claims as follows. The claims are in the format as required by 35 C.F.R. § 1.121.

1. (Currently Amended) A method of generating communication signals comprising the steps of:

selecting a code length, said code length comprising a plurality of chips, wherein each chip of said plurality of chips is one of a nonzero value and a zero value, wherein said non-zero value is one of a positive value and a negative value and wherein said positive value and said negative value correspond to an amplitude of an impulse and wherein said chips are arrayed such that no two of said non-zero values are adjacent; and

arraying said plurality of chips such that there is a plurality of said zero values within said plurality of chips and one or more said non-zero values is arrayed in accordance with a ruler, wherein said ruler is substantially orthogonal to time-shifted versions of said ruler;

using the arrayed chips to generate a signal; and

transmitting the generated signal.

Claims 2-17 Cancelled.

18. (Currently Amended) A method for generating a set of communication signal sequences comprising the steps of:

defining said set such that all of said communications signal codes in said set have a code length, said code length comprising a plurality of chips, each of said chips having a value, said value being one of a positive value, a negative value and a zero value, wherein said positive value and said negative value correspond to an initial direction of an impulse;

arraying said chips such that at least one said positive value and at least one said negative value is placed in accordance with a ruler, said ruler being substantially orthogonal to all time-shifted versions of said ruler and belonging to a family of rulers wherein each ruler within said family is substantially orthogonal to each other ruler within said family of rulers, and such that at least one of said chips has a zero value; and

arraying said chips such that said at least one positive value and said at least one negative value are placed in accordance with a pattern, said pattern being from a family of binary patterns wherein each pattern within said family of patterns is substantially orthogonal to substantially all time-shifted versions of each other pattern within said family of patterns;

arraying said chips such that no two of said non-zero values are adjacent;  
using the arrayed chips to generate a signal; and  
transmitting the generated signal.

Claims 19-24 Cancelled.

25. (Currently Amended) The method according to claim-24 18, wherein said code length is 30 chips.

26. (Original) The method according to claim 25, wherein said family of rulers comprises a first ruler and a second ruler where said first ruler and said second ruler comprise four non-zero value chips.

27. (Original) The method according to claim 26, wherein said family of patterns is comprised of four patterns.

28. (Currently Amended) A radio communication system comprising:  
a radio transmitter; and  
a radio receiver,

    said transmitter and said receiver employing a communications signal having a code length, said code length comprising a plurality of chips, wherein each chip of said plurality of chips is one of a non-zero value and a zero value, and wherein said chips are arrayed such that there is a plurality of zero values within said plurality of chips, no two of said non-zero values are adjacent and one or more said non-zero values is arrayed in accordance with a ruler, wherein said ruler is substantially orthogonal to time-shifted versions of said ruler and wherein said non-zero value is one of a positive value and a negative value and wherein said positive value and said negative value correspond to an amplitude of an impulse.

Claims 29-43 Cancelled.

44. (New) A method of generating communication signals comprising the steps of:  
    selecting a code length, said code length comprising a plurality of chips, wherein each chip of said plurality of chips is one of a nonzero value and a zero value, wherein said non-zero value is one of a positive value and a negative value;  
    arraying said plurality of chips such that there is a plurality of said zero values within said plurality of chips and one or more said non-zero values is arrayed in accordance with a ruler, wherein said ruler is substantially orthogonal to all time-shifted versions of said ruler;  
    arraying at least one said positive value and at least one said negative value in accordance with a pattern, wherein said pattern is selected from a family of patterns, wherein any pattern within said family of patterns is substantially orthogonal to substantially all time-shifted versions of any other pattern within said family of patterns;  
    arraying said plurality of chips such that no two of said non-zero values are adjacent;  
    using the arrayed plurality of chips to generate a signal; and  
    transmitting the generated signal.

45. (New) The method according to claim 44, wherein said positive value and said negative value correspond to an amplitude of an impulse.

46. (New) A method of generating communication signals comprising the steps of:  
selecting a code length, said code length comprising a plurality of chips, wherein each chip of said plurality of chips is one of a nonzero value and a zero value, wherein said non-zero value is one of a positive value and a negative value;  
arraying said plurality of chips wherein:  
there is a plurality of said zero values within said plurality of chips and one or more said non-zero values is arrayed in accordance with a ruler, wherein said ruler belongs to a family of rulers wherein any ruler within said family of rulers is substantially orthogonal to all time-shifted versions of any other ruler within said family of rulers;  
at least one said positive value and at least one said negative value are in accordance with a pattern, wherein said pattern is selected from a family of patterns and wherein said family of patterns is such that any pattern within said family of patterns is substantially orthogonal to substantially all time-shifted versions of any other pattern within said family of patterns; and  
no two of said non-zero values are adjacent;  
using the arrayed chips to generate a signal; and  
transmitting the generated signal.

47. (New) The method according to claim 46, wherein said positive value and said negative value correspond to an amplitude of an impulse.

48. (New) A radio communication system comprising:

a radio transmitter; and

a radio receiver,

said transmitter and said receiver employing a communications signal having a code length, said code length comprising a plurality of chips, wherein each chip of said plurality of chips is one of a non-zero value and a zero value, wherein said non-zero value is one of a positive value and a negative value and wherein said positive value and said negative value correspond to an amplitude of an impulse and wherein said chips are arrayed such that there is a plurality of zero values within said plurality of chips, at least one said positive value and at least one said negative value is arrayed in accordance with a pattern and one or more said non-zero values is arrayed in accordance with a ruler, wherein said ruler is substantially orthogonal to all time-shifted versions of said ruler.

49. (New) The radio communication system of claim 48, wherein said pattern is selected from a family of patterns.

50. (New) The radio communication system of claim 49, wherein said family of patterns wherein any pattern within said family of patterns is substantially orthogonal to substantially all time-shifted versions of any other pattern within said family of patterns.

51. (New) The radio communication system of claim 50, wherein said values are arrayed such that no two of said non-zero values are adjacent.

52. (New) A radio communication system comprising:  
a radio transmitter; and  
a radio receiver,

said transmitter and said receiver employing a communications signal having a code length, said code length comprising a plurality of chips, wherein each chip of said plurality of chips is one of a non-zero value and a zero value, wherein said non-zero value is one of a positive value and a negative value and wherein said positive value and said negative value correspond to an amplitude of an impulse and wherein said chips are arrayed such that there is a plurality of zero values within said plurality of chips and one or more said non-zero values is arrayed in accordance with a ruler, wherein said ruler belongs to a family of rulers wherein any ruler within said family of rulers is substantially orthogonal to all time-shifted versions of any other ruler within said family of rulers and wherein said step of arraying said plurality of chips further comprises the step of arraying at least one said positive value and at least one said negative value in accordance with a pattern.

53. (New) The radio communication system of claim 52, wherein said pattern is selected from a family of patterns.

54. (New) The radio communication system of claim 53, wherein said family of patterns is such that any pattern within said family of patterns is substantially orthogonal to substantially all time-shifted versions of any other pattern within said family of patterns.

55. (New) The radio communication system of claim 54, wherein said values are arrayed such that no two of said non-zero values are adjacent.

56. (New) The radio communication system of claim 55, wherein said positive value and said negative value correspond to an amplitude of an impulse.